NOVEMBER 1967
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EROSION CONTROL TODAY

Soybeans
In the Northeast
Texas watersheds

Boy Scout Jamboree

soil conservation

DEVOTED TO THE WISE USE OF LAND AND WATER RESOURCES

SOIL CONSERVATION SERVICE **U. S. DEPARTMENT OF AGRICULTURE**

November 1967 Vol. 33, No. 4

COVER: This familiar contour stripcropping pattern in the Hunterdon County Soil Conservation District, N. J., symbolizes the continuing role of erosion control in modern conservation programs.

soil conservation

DEVOTED TO THE WISE USE OF LAND AND WATER RESOURCES

Erosion . . .

How fares the land—the basic, essential farmland that feeds and clothes the Nation—in the face of the shifting attention of conservationists to problems of urban and suburban areas, recreation, beautification, and economic growth?

We posed this question to technical staff people. The response discloses both new and old problems of soil erosion demanding attention. It shows that a major part of SCS effort still goes into our original job of erosion control and is likely to continue to do so far into the future.

Soybeans: For one thing, changing agricultural enterprises bring new erosion hazards. Head Agronomist B. D. Blakely spotlights one such problem in his report on soybeans (p. 75)—a booming crop that too often invites erosion. His analysis relies heavily on information supplied by State Conservation Agronomists Clarence Jent of Tennessee, Robert Lawson of Illinois, and John Maddy of Iowa—three States where soybeans are expanding rapidly.

Maine to Texas: The old, familiar erosion problems are still with us too. Information Specialist Les Fox supplies some examples (p. 79) from the Northeast typical of the unfinished conservation work all across the Nation.

And Conservation Agronomist William Smith of Texas underscores the importance of project assistance in treating critical erosion areas in watersheds (p. 81).

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ORVILLE L. FREEMAN, Secretary of Agriculture
JOHN A. BAKER, Assistant Secretary of Agriculture
DONALD A. WILLIAMS, Administrator, Soil Conservation Service
BEN O. OSBORN, Editor
GEORGIE A. KELLER, Production Editor

Prepared in the Division of Information, Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C. 20250

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Soybeans

By B. D. Blakely
Head agronomist, SCS

Soybeans have replaced small grain, hay, and pasture on many Corn Belt farms.

The glamour crop has its problems

Raising soybeans without conservation measures on sloping fields or soils that are apt to blow could well take the glamour out of growing the crop. Serious soil losses have already taken place where fields are not adequately protected.

Some growers, too, have had disappointing results trying to grow soybeans on soils that are not adequately drained.

A soil loss survey on selected farms in west Tennessee, where intensive use is made of sloping upland for soybean production, showed an estimated average annual loss in excess of 20 tons per acre per year. This is four to seven times the established soil-loss tolerance for the soils involved.

Expanding acreage

To say that soybeans have suddenly become an important crop in American agriculture is not quite true. But a 13-million-acre jump in plantings in the past 5 years makes it a crop to be reckoned with in planning farm conservation programs.

In the Cornbelt, soybeans have replaced a lot of the small grain acreage; in the South, large tracts of wooded areas have been cleared. Some of the Blackbelt of Alabama and Mississippi that once was in good grass is now in soybeans, and in the High Plains of Texas, 1967 acreages were more than double those of 1966.

Soybeans were first planted in the United States in the early 1900's. In 1924 there was less than 20,000 acres, and it was not until after World War II that the acreage used for seed exceeded that used for hay. By that time something less than 12 million acres of soybeans were grown.

In the past 5 years, the acreage of soybeans planted for seed has risen from 27,608,000 to an estimated 40,123,000.

Prior to 1960 soybeans were a relatively unimportant crop in Tennessee agriculture. This year soybeans occupy more land in the State than any other cultivated crop. From 394,000 to an estimated 1,185,000 acres in 7 years is the extent of expansion in this crop.

About 95 percent of the Tennessee soybean acreage is found in a 12-county area in the western third of the State. The loess soil of the area, when unprotected, erodes very easily.

Prior to the build-up in soybean acreage, cotton and corn were given first preference in land selection in this section of Tennessee. These crops were grown on the well-drained and moderately well-drained nearly level hilltops and bottom lands. Soybeans took second place on the level wet bottom lands and nearly level fragipan (hardpan) soils. The soybean acreage then was confined to the larger farms where ample level land was available for row crop use. Erosion was not a serious problem under those conditions.

Serious erosion hazards

Soybeans are now being grown on many thousands of acres of sloping upland where serious erosion hazards exist. Most of this upland is being continuously cropped to soybeans, with little use of conservation practices. In fact, a considerable acreage that was formerly in perennial pasture and

Soybeans planted in straight rows up and down the slope bring back the old problem of erosion and sediment deposits on Southeastern fields.

hay crops is now being used to grow soybeans.

Iowa has more than doubled its acreage of soybeans during the past 10 years. Plantings increased again this year to more than 5 million acres. This is nearly one-half the acreage of corn grown for grain.

During this period, small grain, hay, and pasture acreages have decreased. Row crops increased more than 2 million acres, and most of the gain was in soybeans.

The greatest increase in soybean acreage has occurred in north central Iowa. This area is fairly level to gently rolling, and although water erosion is not generally severe, wind erosion is an increasing problem.

More profit, less risk

A number of reasons account for the phenomenal expansion in soybean production, foremost being the strong demand and favorable prices in recent years.

In the short-run, there is more profit and less risk in producing soybeans than in most other farm enterprises. Studies indicate that net returns are from $3 to $9 an acre higher from intensive use of land for soybeans than from conservation cropping systems that keep soil losses to safe tolerances.

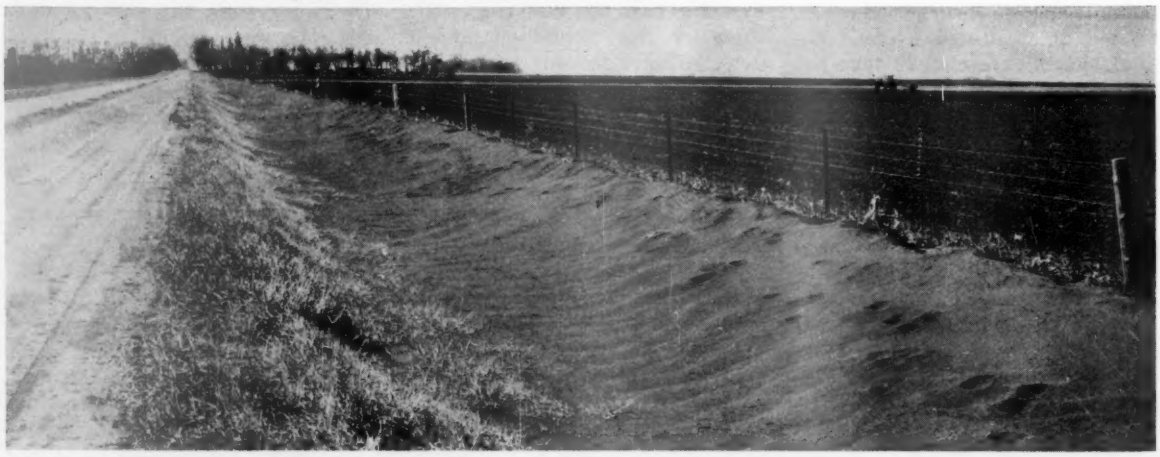
In addition, soybean production is highly mechanized, and labor requirements are low.

For example, Delmar Corderman, who lives in the Sac Soil Conservation District in Iowa, used to be a dairy farmer with 40 percent of his cropland in hay and pasture. Most of his farm is now in corn and soybeans, with the remainder in diverted acres. He is now a cash grain and hog farmer. This change in type of farming is typical of countless other successful Cornbelt farmers.

Another factor contributing to increased row cropping is absentee ownership and large numbers of aged owners. These owners cash-rent their lands on short-term agreements. Lessees are inclined to use all suitable land for row crops with little consideration for soil-conserving or other land-improving techniques.

Soybeans on sloping fields are an erosive crop—much more so than high-yielding corn. Under similar soil and slope conditions, soil losses on soybean fields are likely to be about 30 percent more

Finely tilled soils left bare after soybean harvest are vulnerable to wind erosion.



than where the stalks of high-yielding corn are left on the field. Soybeans do not leave a good cover of residues after harvest, and the soil is left unprotected against the ravages of wind and water.

Conservation is practical

But conservation farmers are meeting the challenge of controlling soil erosion on the increased acreages of beans and other crops.

Modern soil conserving practices are just as suitable for soybeans as they are for corn and similar row crops. Well-designed terrace systems, alined contour farming and stripcropping systems, minimum tillage, and management of crop residues are all important in reducing soil losses. These practices are practical with modern equipment.

Arthur Raisch, who farms sloping land in the Franklin County Soil Conservation District, Iowa, states, "I have installed some of the new grassed backslope terraces, and now I can plant some soybeans on my rolling land without much loss of soil and water."

Direct planting into bermudagrass sod gives protection from erosion.

Conservation farmers seldom grow more than 1 year of soybeans on their sloping fields. They usually plant the beans between corn crops that are used for grain, or before small grain. Or, as in the South, they plant soybeans following a grain crop, using minimum tillage so as not to destroy the grain residues.

Many soil conservation district cooperators are doing an excellent job of controlling erosion on soybean fields. Farmers with livestock programs are using cropping systems that keep soil losses at or near tolerance levels. Others use conservation practices such as parallel terraces, diversions, contour farming, and grassed waterways.

Leaving the crop residues from the previous crop on the surface of the soil is an effective practice and one that is receiving more and more attention.

Phil Naeve, who operates a large farm with his brother in the Humboldt County Soil Conservation District, Iowa, says, "We have stopped plowing soybean ground in the fall. We disk once after harvest to anchor the soybean straw and prepare a seedbed for corn in the spring with a field cultivator."

Although minimum tillage practices that reduce soil losses are becoming increasingly popular, in far too many cases accelerated erosion goes uncontrolled where farmers have taken to the glamour crop of soybeans.

In Illinois, there are more than 5 million acres of soybeans. Most of the new acreage is in the Cisne claypan area in the southern part of the State.

It is estimated that 90 percent of the soybean growers in Illinois are using some type of conservation tillage operations—from no cultivation to not more than two cultivations—in combination with post-emergence herbicides. Some use chisel plows or disks to prepare a seedbed rather than the moldboard plow, and there is a trend to 20- to 30-inch row spacings; all have a beneficial effect.

Carl O. Huren, of the Franklin County Soil Conservation District, Iowa, who is stripcropping and building parallel terraces, sums it up this way: "We need to work the ground less and improve a way of putting the crop in with very little soil movement or disturbance and use a better herbicide to control weeds without cultivating."

So, soybeans can be safely grown and are a profitable crop, if needed conservation measures are applied. Otherwise, they can be a problem because of excessive soil and water losses. ♦

A look at farming in Niger

By Robert M. Craig
Conservation agronomist, SCS, Gainesville, Fla.

One gains a new appreciation of the value of natural resources from an on-the-ground study of the agriculture of Niger, Africa.

I had this experience as a member of a five-man USDA team that evaluated U.S. agricultural assistance projects there in the spring of 1966 and reported on additional needs.

We found that soil conservation is a new term to the Hausa farmers who live in west-central Africa. When we explained in detail what it means, they translated it into the Hausa language as "health of the soil."

Let's take a look at an average Niger farmer and his resources:

He is farming a few acres of sandy, infertile soil in a 20-inch rainfall belt. The rains come during a 3- to 5-month period, with none at all during the remainder of the year. He has no mechanical or animal-drawn equipment or even adequate hand tools. Fertilizer costs three times what it does in the United States. His annual income is less than $100. His education is very limited, and he has no capital or ready source of borrowing money. There is practically no source of technical help from Government agencies, such as the Soil Conservation Service, Farmers Home Administration, Agricultural Stabilization and Conservation Service, or Agricultural Extension Service in the United States.

At one of the meetings, we learned that the local farmers' principal need was for tools to produce more food for themselves. They said that they could use a small garden-type tractor. When asked how they could keep the tractor in operation, they said they would take the smartest young man in the village and in some way train him to do the job.

The farmers know that there are more effective ways to produce food by using better plant varieties, insect control, and other improved practices. They want to learn the improved methods.

The nomad cattlemen, who move their cattle with the rains, are often in conflict with the farmers when they move into cultivated areas and their cattle break into and graze the fields. The nomads prefer not to move into these areas. They want instead the know-how and ability to raise enough food in the natural range areas.

Other groups said they hated to see the water going to waste down the watercourses during the rainy season. They wanted to hold this water back to irrigate another crop during the dry season. If they knew how, it would be possible for the villagers to work together in building and financing the necessary water-control structures.

They also need water control along the major rivers to irrigate crops. They wanted to know about better methods of drawing water from their open wells. Now, this task is all done by hand.

In summary, the principal agricultural needs of the Hausa farmer are for:

(1) Better supply of water for people, animals, and irrigation.

(2) Hand tools and animal-drawn tools.

(3) Knowledge of how to conserve and properly use their limited soil, water, and plant resources.

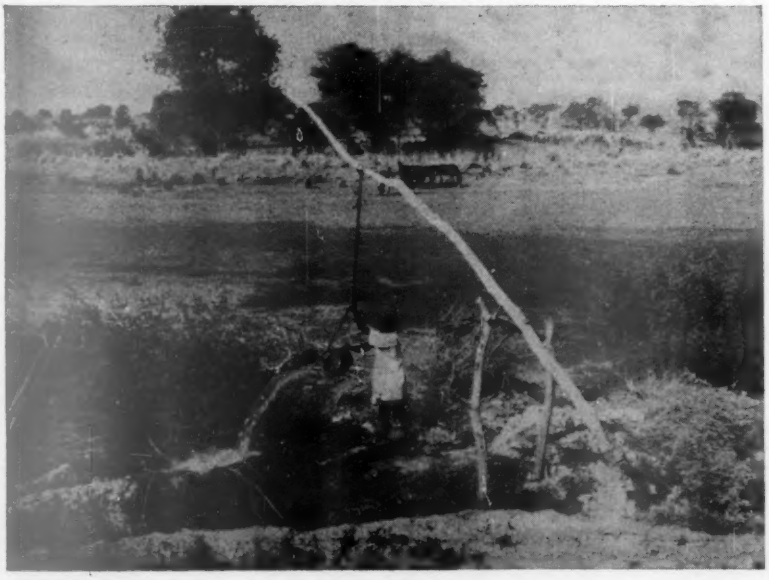
(4) Help in learning about improved methods of crop production.

(5) A way to alleviate the conflict between the nomad and farmer.

These are all complex problems, but as one farmer said: "If our problems were simple, we would not be an underdeveloped country."

We were impressed with the willingness of the farmers to help themselves and their desire for people to show them how. ♦

Water is drawn by hand on a Hausa farm in Niger.



Old problems for a modern program . . .

Erosion by wind and water still needs attention in Northeast

In the humid Northeast, an area noted for wooded hills and scenic beauty, there still are cultivated areas where soil erosion calls for action to meet USDA's Agriculture/2000 goal to "upgrade the quality of the environment."

"Achieving erosion control and reducing sediment damage on two-thirds of the privately owned lands not yet adequately treated" is one of the planks in the Department's platform for Resources in Action.

Although farmers across the Nation have made great strides in reducing erosion, there still are problem areas where losses by wind and water are expensive to farm operators and threaten future productivity.

Wind erosion is a serious problem in several Northeastern areas. In Camden County, N. J., for example, 5,000 acres of Downer, Westphalia, and Freehold soils are subject to wind erosion. These soils are permeable and easily worked after a rain. They warm up early in spring, so they are good for raising sweet corn. But even a light spring wind can whip the fine sands around, cutting off

A spring duststorm (upper) in New Jersey reduces visibility and sandblasts tender asparagus into grotesque and unmarketable shapes. Several inches of sediment (lower) at lower edge of potato field in Maine shows severity of erosion.

young corn plants at ground level.

Wind raises havoc with other young plants, too, on unprotected fields in parts of New Jersey's truck farm area. Asparagus tops, for example, can be sliced off or blown into grotesque and unmarketable shapes.

A farmer in Gloucester County, N. J., loses as much as 50 tons of soil in 2 or 3 days whenever a strong spring wind blows. A privet hedge or other vegetation planted in strips or rows to form a windbreak could help control soil blowing.

Water erosion also continues to be a problem in New Jersey. The Conservation Needs Inventory indicated that of 864,000 acres of cropland expected to be in production in 1975, 251,400 acres will need conservation treatment to control erosion.

Pat Licciardello of Swedesboro was losing 30 tons of topsoil with every heavy rain. But he put a stop to the loss by applying a coordinated conservation plan on his farm in cooperation with the Gloucester County Soil and Water Conservation District. With the help of SCS technicians, he drew up a plan that included 3,000 feet of grassed waterways, 2,000 feet of terraces, and 100 acres of contour planting. With these conservation practices now on the land, erosion has been reduced to a minimum.

In Maine's potato land of the Central Aroostook Soil Conservation District, about 700 farms comprising some 100,000 acres are suffering accelerated sheet erosion. The yearly loss is figured at 18 tons an acre. In some places, where potatoes have been grown on sloping land without the protection of conservation measures, all the topsoil has been washed away, leaving the subsoil exposed.

The effects of neglecting conservation show dramatically in the tobacco-growing area of Prince Georges Soil Conservation District, Md. On 50 percent of the tobacco land, the yearly soil loss runs between 8 and 25 tons an acre. On 20 percent of the land, the loss exceeds 25 and sometimes even 100 tons an acre. ♦

Erosion leaves a Maryland tobacco field (upper) scored with rills and exposes roots of young tobacco plant. A single thunderstorm cut a gully (lower) through a Maine potato field just after planting when the soil was bare and loose.

Land treatment in Texas watersheds gives far-reaching benefits

By William L. Smith
Conservation agronomist, SCS, Temple, Tex.

Treatment of critically eroded areas in Texas watersheds produces long-term benefits and serves a double conservation purpose. It boosts farm income through more efficient use of land and protects downstream water resources and flood-plain property.

Not only do critically gullied areas face destruction themselves, but they produce damaging runoff and sediment. Control of most critical areas is beyond the scope of the individual landowner. On-site benefits alone do not often warrant the cost of treatment. Benefits must come from downstream protection.

For example, 98 million tons of silt are delivered annually to the streams of Texas from agricultural land. A major part of this comes from critical areas in the upper reaches of the watersheds.

Three USDA programs, Watershed Protection and Flood Prevention under Public Law 566, Great Plains Conservation Program, and the Agricultural Conservation Program, help accelerate efforts to treat these areas.

Clear Creek watershed

Clear Creek, a subwatershed of the Trinty River Flood Prevention Project located near Montague, and Choctaw Creek Watershed Project in Grayson County, Tex., are two examples of watersheds where critical area treatment plays a vital part in watershed protection. The upper 18 percent of the watershed lies in the West Cross Timbers Land Resource Area underlain by poorly consolidated sand that is easily eroded. Before treatment, the critical sediment-source areas in this watershed had an annual erosion rate of about 6.65 acre-feet per square mile.

To protect a system of 52 floodwater-retarding structures, 14 critically gullied areas were treated. Two grade stabilization structures, 3.55 miles of diversions, 1.25 miles of terraces, and 13 sediment-control structures were built and vegetated. This work was in addition to regular conservation measures installed by landowners.

Fourteen critically gullied areas, a total of 372 acres, were sloped, plowed, fertilized, mulched, and seeded to adapted grasses. They were also fenced so the grass could be managed properly.

The project was sponsored by the Upper Elm-Red and Denton-Wise soil and water conservation districts, by Denton, Montague, and Cooke counties, and by the Clear Creek Watershed Authority.

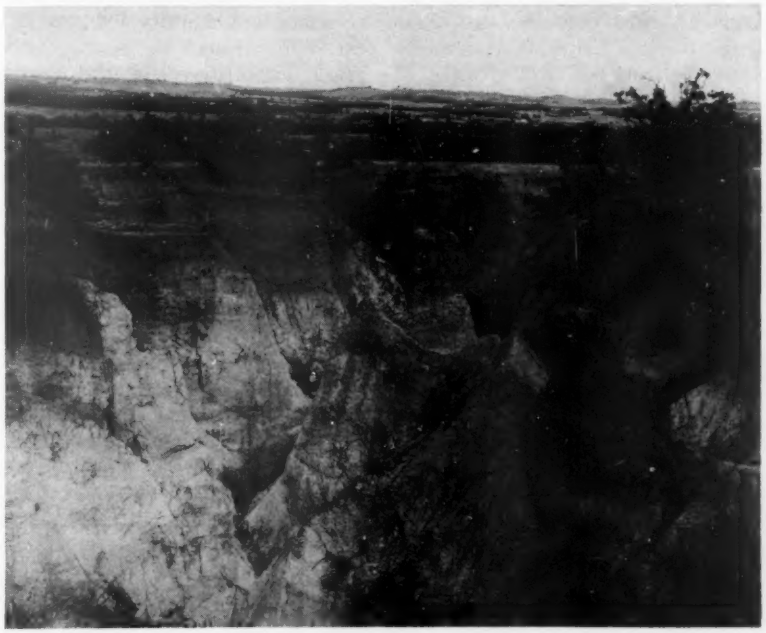
The watershed authority obtained easements and land rights. The Soil Conservation Service furnished technical assistance and the cost of establishing works of improvement. Sponsors are responsible for operation and maintenance of the project.

Cost-sharing program

The 14 areas treated as a part of this project are only a few of those in the watershed needing treatment. Others are being treated by landowners under the Great Plains Conservation Program, with SCS furnishing technical help and about 80 percent of installation costs.

Most critical areas treated under the Great Plains Program are sloped, plowed, fertilized, and planted to adapted grasses—main-

During heavy rains such critically gullied areas as this one in the Clear Creek watershed dump tons of eroded material, too sterile to be called soil, on valuable downstream bottom land.



A critical sediment-source area in Choctaw Creek watershed before treatment (left) and after shaping and sodding with coastal bermudagrass. Note the same tree in upper right-hand corner of each picture.

ly hybrid bermudagrass. Grade-stabilization dams are built as needed to control overfalls. In the Clear Creek watershed, 140 acres of critically gullied areas and 1,857 acres of less severely eroded land have already been planned and are being treated under this program.

To aid the Choctaw Creek Watershed Project, the Grayson County ASCS Committee approved a special practice under the Agricultural Conservation Program to treat 134 acres of severely gullied land and 3,000 acres of other eroded areas. The sediment control will help protect 34 floodwater-retarding structures, seven multiple-purpose dams, and 20 miles of stream channel improvement.

Under the ACP practice, landowners receive increased payment for sloping, preparing seedbed, fertilizing, and planting grass on the designated areas. SCS furnishes technical assistance for planning and installing the practice. About 400 acres were treated in 1967.

Benefits from watershed projects are far reaching. For example, the annual cost of $314,164 for structural measures in the Choctaw watershed is expected to produce annual benefits of $427,109—a 1.3 to 1 ratio. For the Clear Creek Project the benefit-cost ratio is 1.5 to 1. ♦

Rural families benefit from poverty loans

More than 23,000 of the Nation's rural families isolated in poverty were given a chance to break their economic barriers with economic opportunity loans in fiscal 1967, through the lending program administered by the Farmers Home Administration for the Office of Economic Opportunity.

The past fiscal year, ending June 30, saw 16,453 loans totaling $28,159,747 made to individual rural families in the lowest income group to provide tools, supplies, and working space they need in order to earn a better living.

Another 7,200 families, members of rural cooperatives, benefited from the 382 loans advanced to groups in fiscal 1967 by the Farmers Home Administration. Loans totaling $4,086,382 were used to develop new cooperatives or improve existing organizations ranging in membership from three to 1,136 families.

Since start of the EO loan program in January 1965, more than $74 million in individual loans has gone to 44,000 rural families, and more than $9.7 million in group loans has been advanced to 827 cooperatives involving about 13,074 rural families.

The individual economic opportunity loan borrowers are following about 350 different kinds of nonagricultural enterprises in addition to farming, as a result of the helping hand extended them through the program. Individual loans average $1,711 a family, with a maximum of $3,500 in effect.

Under the program, cooperatives, unlike individual families, are not limited in the amount of financial assistance they receive. In fiscal 1967 group loans averaged $10,697. Through the cooperatives, low-income people gain the use of equipment or other facilities they cannot afford individually. ♦

Soil conservation districts

Each soil and water conservation district is autonomous and self-governed. It has authority to enter into working agreements with other governmental agencies and with private concerns to carry out its purposes. ♦

Japanese Scouts fly their colorful pennants.

Conservation
—in your hands

World Scout Jamboree introduces boys to natural resources on SCS teaching trail and at other agency exhibits

On the wooded shores of beautiful Lake Pend Orielle in northern Idaho, Boy Scouts and scouters from 103 nations gathered August 1 to 9 for the Twelfth Boy Scout World Jamboree—the first ever held in the United States and the first one at which conservation activities and programs were an integral part of the daily schedule. Host for the international event was the Boy Scouts of America.

To many of the 12,000-plus Scouts at Farragut State Park, conservation was a new word. Learning about the need for and the principles of conserving natural resources in all parts of the world was an exciting new adventure on the frontiers of knowledge.

The friendship theme

"For Friendship" was the overall theme of the Jamboree, and under this banner Scouts learned not only about the relationships among natural resources but also of the interdependence among nations with regard to proper use and care of resources.

More than 50 private, State, and Federal resource agencies and organizations sponsored exhibits and demonstrations in the Jamboree conservation area.

Duplicate basic instruction areas, each with four stations featuring different resources—geology and soil, water, plants, and wildlife—were cooperatively developed by several State and Federal agencies.

At the first station, a 4-foot-deep soil pit was dug to show Scouts the appearance of soil where they stood. To show the kind of soil that developed under different conditions, a soil monolith from nearby Bernard Peak was displayed near the pit.

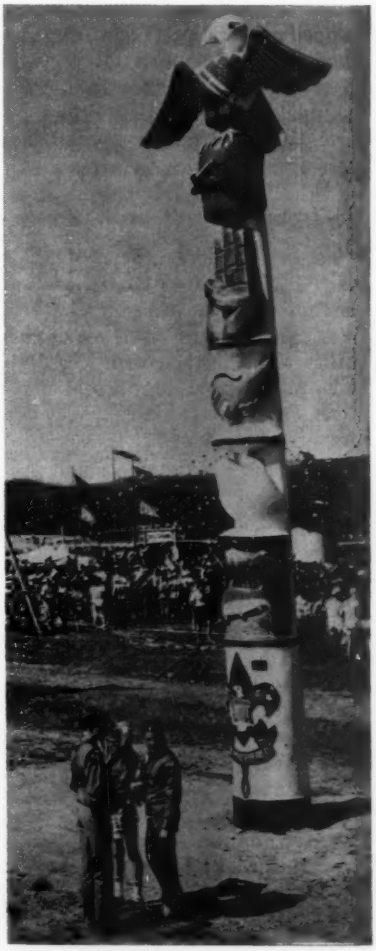
Specially trained technicians from the agencies, including the Soil Conservation Service and the Forest Service, gave prepared lectures and answered questions for troops of Scouts during hour-long sessions in the basic instruction area. This was one of many activities Scouts could participate in to earn the coveted Adventure Award badge given at the Jamboree.

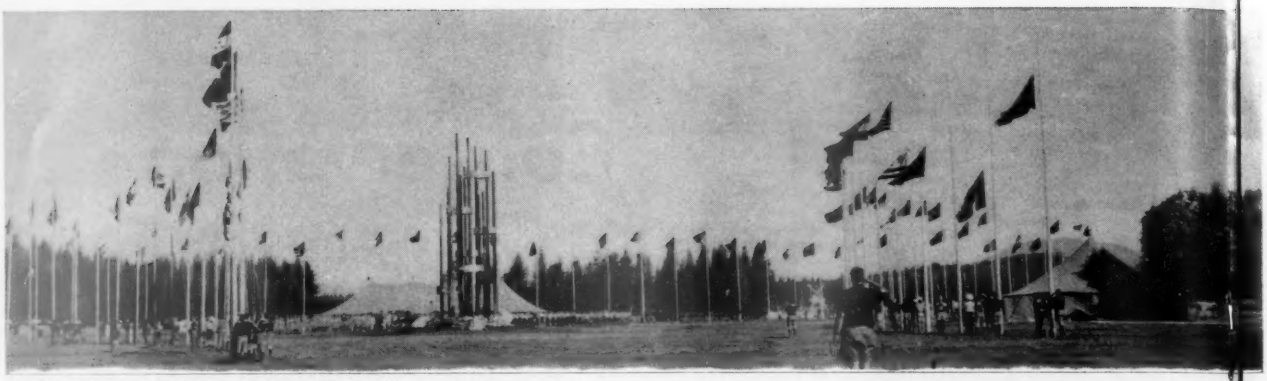
At the conservation fair

In a separate "Conservation Fair" area, a broad array of displays and demonstrations helped to show that the welfare of the whole human family and of all life on earth depends in large measure on proper use and care of the world's natural resources.

Along the "Conservation—In Your Hands" trail developed by

International exchange at the totem pole.





the Soil Conservation Service, Scouts first were introduced to the beauty of the American countryside and to different conservation practices by a display of "America The Beautiful" color pictures. Next, they learned how soils developed under desert, prairie, and woodlands differ. Here they viewed seven soil monoliths from various parts of the United States, illustrating soils similar to those of their own countries.

Hoisting of flags of more than 100 nations (above) around Friendship Tower opened each day's activities at the World Jamboree. Miniature soil profiles assembled in plastic tubes by Scouts as part of their instruction on soil conservation were popular souvenirs of the Jamboree. At right, Irving Feist (center), international commissioner, BSA, and Alden G. Barber, chief Scout executive, receive their samples from Mel Carlson, SCS woodland conservationist for Idaho. At another station (below) SCS conservationist Van Haderlie, Helena, Mont., explains soil characteristics exhibited by an open pit and soil monoliths.

Do-it-yourself soil profiles

To help remind them of their visit to the United States and of the importance of soil to their lives, Scouts were given an opportunity to make their own "ersatz" soil profiles from supplies of mudstone, decomposed granite, clay, and surface soil.

The 5,500 Scouts who made profiles carried away a half-ton of northern Idaho soil that was sterilized, sealed in 1-inch diameter plastic tubes, and labeled so they could be taken through customs.

At the runoff-erosion control station, the value of plant cover and mulches in preventing wind and water erosion was demonstrated. Scouts saw water run off bare ground carrying surface soil with it and causing gully and sheet erosion. They learned about damage to water quality as the muddy water ran into glass containers and the sediment settled to the bottom.

On adjacent demonstrations

The SCS exhibit of the major plant communities of northern Idaho (above) provides a quiet place for rest at the end of the trail. Morlan Nelson (left), SCS snow survey supervisor for Idaho, displays his golden eagle and sparrow hawk (on post). SCS Conservationist Daniel Moore (below) of Meridian, Idaho, explains the erosion and runoff exhibit to Assistant Secretary of Agriculture John A. Baker as he welcomes him with the traditional Boy Scout handshake. Also seeing the exhibit are Ed Cliff (far right) chief of the Forest service, and Neal Rahm, regional forester of Missoula, Mont.

they saw grass cover and plant material mulches prevent splash erosion, help water soak into the soil rapidly, and control soil erosion so the water that did run off was clear.

Farther along the trail were automatic electronic models of two watersheds—one demonstrating the destructive effects of uncontrolled water and lack of conservation practices, the other showing the benefits to all residents of the watershed of proper land treatment and use of appropriate water-control structures.

It was here that the relationships among resources were tied together, and the Scouts learned that conservation management of watersheds reduces the threat of floods, protects soil and water resources, gives opportunities for developing recreation areas around impoundments, improves wildlife habitat, and provides communities with water supplies for industrial, agricultural, and municipal uses.

Wildlife and the land

"Abundant Wildlife—Product of Good Land Management" was the theme of the SCS station at which Scouts saw a demonstration of the art of falconry. While viewing a 35-foot color mural depicting modern conservation practices that benefit wildlife, they learned about the essential needs of wildlife and how good land management provides for these needs.

At a series of six panels developed in cooperation with the University of Idaho, Scouts could study six different plant communities of northern Idaho as they related to a particular kind of soil.

Sixteen SCS professional conservationists from seven States and Washington, D. C., helped conduct the demonstrations and tours. Two were interpreters in Spanish and French.

As they journeyed to their homes in many lands after the 9-day Jamboree, most Scouts took with them a new understanding of the world around them and of the importance of using natural resources wisely. They also gained appreciation of the role they must assume in helping to arouse the interest of their friends and neighbors to learn more about and to practice conservation.

And many Scout leaders, including the chief Scout officials of several nations, returned to their jobs inspired to make conservation an important part of the Scouting program in their countries. ♦

Outdoor Code

As an American, I will do my best to - - - -

BE CLEAN IN MY OUTDOOR MANNERS. I will treat the outdoors as a heritage to be improved for our greater enjoyment. I will keep my trash and garbage out of America's waters, fields, woods, and roadways.

BE CAREFUL WITH FIRE. I will prevent wildfire. I will build my fire in a safe place and be sure it is out before I leave.

BE CONSIDERATE IN THE OUTDOORS. I will treat public and private property with respect. I will remember that use of the outdoors is a privilege I can lose by abuse.

BE CONSERVATION-MINDED. I will learn how to practice good conservation of soil, waters, forests, minerals, grasslands, and wildlife; and I will urge others to do the same. I will use sportsmanlike methods in all my outdoor activities.

Order of the Arrow Scouts study and practice conservation

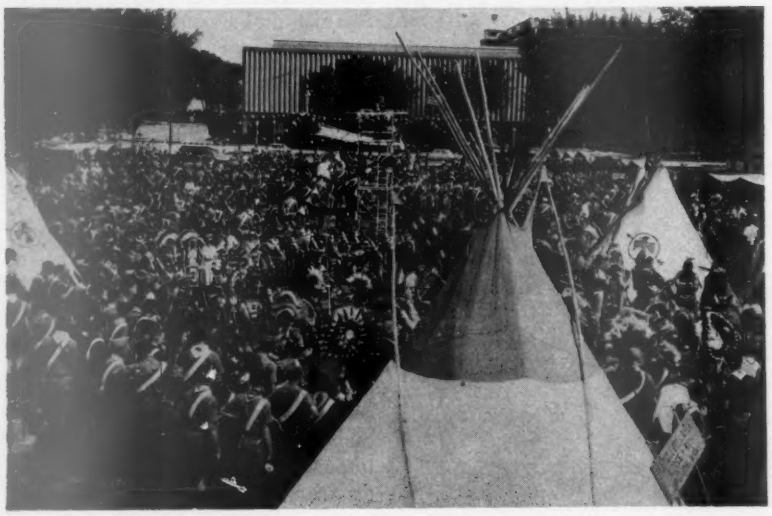
"I will learn how to practice good conservation of soil, waters, forests, minerals, grasslands, and wildlife; and I will urge others to do the same."

This is part of the Outdoor Code to which about 4,500 boys pledged renewed dedication in August at the 52d conference of the Order of the Arrow, Boy Scouts of America.

An elite camping and conservation fraternity within the Boy Scout organization, Order of the Arrow members are elected by others in their local troop, on the basis of exceptional skills in camping, conservation, and outdoor life. There are a quarter million of these young men in 512 lodges in 200 Scout councils in the United States.

At their national conference, held this year on the University of Nebraska campus in Lincoln, many special exhibits on conservation were arranged by public agencies and private organizations.

Scouts exhibited their camping, lifesaving, and conservation skills in "county-fair" fashion on the campus of University of Nebraska at the 52d annual conference of the Order of the Arrow.



An exhibit placed by the Soil Conservation Service was titled "Patterns on the Plains."

Holt County Soil and Water Conservation District of Nebraska prepared a panel of native grass specimens on which Scouts could practice identification with a push-button-lights device.

Explorer Scouts of Post 501, which is sponsored by the Lincoln Chapter of the Soil Conservation Society of America, distributed copies of the SCSA publication, "The Story of Land—Its Use and Misuse Through the Centuries and Today," at their booth.

Most Order of the Arrow members have had experience in local conservation projects that give them an opportunity to practice their skills while making their community a better place to live.

In Georgia, the Flint River Council brought a conservation message to about 20,000 people through exhibits at seven county fairs.

OA Scouts in the Denver Area Council planted 6,000 trees at 10 sites in the Jefferson County School District in Colorado.

Erosion-control work and beautification projects on an 88-mile stretch of expressway served as a conservation project for Atlantic City, N. J., Council, while nearly 5,000 Scouts in Buffalo, N. Y., completed 2 hours of conservation work each.

In Utah, Scouts planted bitterbrush for mule deer food as a wildlife conservation project in reclaiming 32 acres of burned-over rangeland near Salt Lake City.

Last year's tornado damage to Central Park in Topeka, Kans., provided an opportunity for the Jayhawk Area Council to contribute about 25,000 Scout-hours of rehabilitation and conservation work. ♦

Nursery has long history of growing trees for conservation planting

By Ray Lane
Work unit conservationist, SCS, Havana, Ill.

In the early 1930's Illinois conservation leaders saw the need for a tree nursery that would enable landowners to translate their newly awakened conservation interests into deeds.

The State of Illinois established the Mason State Tree Nursery 9 miles east of Havana to produce planting stock for erosion-control and reforestation where plants otherwise would not be available.

Since the mid-thirties the Mason Nursery has produced trees and shrubs at the rate of 5 to 10 million plants a year. The nursery has also developed new plants which later found their way into commercial channels.

"That's 5,000 to 10,000 acres of new tree plantings from this one nursery each year," says Hugh Wycoff, nursery suprintendent. "They protect eroded land, make a better home for wildlife, and beautify the rural landscape in Illinois' 100 soil and water conservation districts."

Originally, 80 acres of land was purchased by the State for the nursery operation—50 acres for tree production and 30 acres for permanent shelterbelts, small forest plantings, beautification plantings, wildlife habitat, buildings and roads.

In the beginning, supervision and labor were supplied by the Emergency Conservation Work Program and the Civilian Conservation Corps. Later the Soil Conservation Service provided technical assistance and supervision for the nursery program. In 1937 the Illinois Division of Forestry assumed full responsibility for the operation.

Soil and water problems

The nursery officials soon saw that they had soil and water problems just as other rural landowners do. In 1949, Superintendent Wycoff requested help from the Soil Conservation Service on complete conservation plan including the needed drainage ditches to remove surface water from the fields.

Since seedling trees must have optimum soil moisture, a water-supply system for irrigation was also established. The nursery is fortunate in having 26 feet of combined water depth above bedrock, which averages about 150 feet below the surface. By 1955, sprinkler systems were adequate to reach all 50 acres of the fields that produce nursery stock.

The need for other conservation measures, such as fertilizing, mulching, green manure crops, cover crops, weed control, and insect control, was also clear. Green manure is provided by growing sudangrass on about one-third of the plots each year. Generally, this crop will produce about 20 tons of green manure a year. In addition, about 500 cubic feet of sawdust is applied to increase organic material in the soil.

Nitrogen in large quantities is required to bring about decay of the sawdust and sudangrass. Sawdust is also applied to the beds to keep small trees from freezing and to eliminate weed growth. Sawdust reduces evaporation and retards wind erosion.

A conservation example

In addition to producing trees and other woody plants for farm plantings, the Mason Nursery provides examples of conservation on its own land. Natural beauty is seen in its many rows of spirea and arborvitae. Shelterbelts of pine, spruce, fir, osage orange, and redcedar offer an outstanding example of wind-erosion control and add their bit to rural beauty in the community. Autumn olive and Amur honeysuckle are grown for their wildlife benefits.

These trees and shrubs also provide nesting sites for songbirds.

A crew lifts shrub stock for wildlife plantings as Manager Wycoff watches.

Nursery Manager Hugh B. Wycoff with a package of 1,000 small pine trees ready for shipment.

Mourning doves are increasing in the vicinity for this reason. The pines and other trees and shrubs serve as temporary living quarters for migrating birds. Owls that occasionally migrate here in severe weather make their temporary homes in the nursery. Crossbills and other species also stop in from time to time.

The Mason Nursery continues to fill a unique role in producing nursery plants for conservation purposes. Demands change but are never satisfied, as more and more people find new ways to protect and beautify the Illinois countryside. ♦

Soil in irrigation planning

Soil is the foundation on which a conservation irrigation system must be built. It must be irrigable; that is, capable of sustaining yields high enough to pay the costs of development plus those of farming operations and maintenance. A farmer must be able to get a profit from irrigation without soil deterioration.

New RC&D projects are approved for planning in 18 States

Fifteen new Resource Conservation and Development projects covering more than 40 million acres in 18 States have been approved for USDA planning assistance. Two of them, one in Alabama and one in Virginia and West Virginia, have also been authorized for operations.

Forty-one RC&D projects including nearly 100 million acres have been approved for planning assistance or operations since the program was launched in 1964.

The projects are intended to help broaden soil and water conservation district programs, speed up the small watershed program and encourage multipurpose resource use, develop recreation on public and private lands, beautify the countryside, and create better rural facilities to attract new industry.

Following are the newly designated projects:

The Wiregrass Project, including nine counties in southeast Alabama, will concentrate on erosion and sediment control, restoration of strip-mined areas, and water-resource management. Other improvements include better housing, sanitary and health facilities.

The Mountain-Dominion Area Project in five counties of Virginia and West Virginia is designed to improve water-resource management, increase employment opportunities, and carry out other comprehensive plans to upgrade the area's economy.

The North Cal-Neva Project in northeastern California and northwestern Nevada hopes to strengthen the family farm and halt an outflow of the area's population through mineral and forest resource development and improvement and promotion of tourist and recreation facilities.

The Eastern Connecticut Project will combine municipal, regional, and State planning to coordinate land, water, and other resource developments for agricultural, industrial, and urban uses in an 870,000-acre area.

The Georgia Ohoopee River Project, covering Treutlen, Wheeler, and Montgomery counties, calls for watershed and public recreation developments, and accelerated technical assistance to speed up land treatment, complete soil surveys, and deal with roadside erosion.

The East Central Minnesota Project of four counties is designed to develop markets for woodland products and specialty crops, and to plan and zone lands, lakes, and streams for more efficient use, at the same time preserving their natural beauty and preventing overcrowding and pollution.

The Northeast Mississippi Project includes plans to reduce flood damages in its 19-county area, increase agricultural efficiency through conservation, development, and proper use of farmland, and to develop woodlands for timber production, recreation, and wildlife habitats.

The Southwest Missouri Project aims to develop soil, water, and plant resources according to an overall plan for the 10-county area. Sponsors believe higher incomes and better living conditions will result from cooperation of agencies, groups, and individuals in the plan.

The North Country New Hampshire Project is expected to increase opportunities for young people and year-around employment for all ages, promote

fficient dairy and crop production, expand industrial and forest production, and develop fish and wildlife areas in Carroll, Coos, and Grafton counties.

The Southwestern New York Project intends to organize land-use developments around community-oriented goals, including commercial recreation, to attract revenue and make better use of existing resources in the counties of Chautauqua, Catteraugus, and Allegany.

The North Central Piedmont Area Project in North Carolina is expected to develop water resources to serve water needs for the six counties, reduce soil erosion and siltation, make land use adjustments, and improve educational and other facilities for better rural and urban living.

The Buckeye Hills Project of five counties in Ohio will set out to provide employment for local people, improve health and other facilities, reduce pollution, prevent floods, increase recreation opportunities, and develop other natural resource-based programs.

The Northeastern Pennsylvania Project, including five counties in the Appalachian Region, will emphasize a stabilized economic development of the area, increased public recreation opportunities, land use planning, and improved woodland management.

The Eastern Hill Country Area Project in Texas, covering the counties of Gillespie, Blanco, and part of Llano, is expected to reduce flood damages, develop mineral resources for industrial use, preserve historical sites and wildlife areas, and improve rangeland management.

The Western Wyoming Project covers all of Lincoln and Uinta counties in Wyoming and part of Caribou County in Idaho. The sponsors hope to increase control over water release from snowmelt, increase farm and ranch efficiency, and improve recreation facilities.

28 RC&D projects now in operation

Recent authorization of operations in eight additional RC&D projects brings to 28 the number actively installing planned project measures. Thirteen others are in the planning stage.

Two projects were authorized for operations only weeks after approval for planning assistance. They are the Wiregrass Project in southeast Alabama and the Mountain-Dominion Area Project in Virginia and West Virgina.

Newly authorized projects include the South Central New York Project, Lowcountry Project in southeastern South Carolina, Bossier and Webster Parishes Project in Louisiana, Box Elder Project in northwestern Utah, Shawnee Project in 14 counties of southern Illinois, and the Southeast Texas Project.

The previously authorized Bon Homme-Charles Mix Project in southeastern South Dakota was enlarged by adding Douglass County. The name was changed to Randall RC&D Project. ♦

Summer home for junior ranchers

Conservation, cattle, and kids are big in the Milhous scheme of things.

Oliver and Frances Milhous have raised their 19 foster children, plus two sons of their own, on their 700-acre ranch 11 miles north of Nevada City, Calif.

Now, they are operating a vacation farm equipped to handle 80 boys and girls, ages 7 through 17, who gather eggs, milk cows, bottle-feed lambs, and care for other livestock during 2-week sessions.

When they moved to the ranch in 1951, Milhous signed up as a cooperator with the Nevada County Soil Conservation District, adopted a conservation plan, and rented a portable saw mill through the district.

They built their own home and out-buildings from home-sawed lumber, cleared the brush on their Sierra Nevada ranch, and carried out the conservation plan.

Milhous cleared about 300 acres of brush, improved timber stands, built seven farm ponds, and developed springs to supplement the ponds and provide domestic and irrigation water supplies. Now, once-dry creek beds run year-round, and Milhous markets continual harvests of lumber and firewood.

"I am not as much interested in making a profit as I am in making a place for children to enjoy," Milhous said.

The ranch has 80 head of cattle, 40 horses, 24 burros for pack trips, sheep, goats, pigs, chickens, ducks, geese, peacocks, pigeons, and guinea hens.

Care of the animals, including a captive bobcat and ringtailed cat, is a must on the young guests' daily schedule.

But it's not all work. Between ranch chores, there are plunges into the "ole swimming hole" in nearby Yuba River; fishing or boating on the seven manmade lakes; midnight 'coon hunts; horseback riding; camp-outs; and delicious home-cooked food.

Counselors instruct guests in horsemanship, woodsmanship, swimming, lifeguarding, fishing, hunting and hunter safety, tracking, arts and crafts, nature studies, and sports coaching.

Wildlife—deer, racoon, bobcat, quail, and mallard duck—provide additional outdoor education and enjoyment.

"Children can see fancy buildings, concrete slabs, and pavement in the city." Milhous says. "When they come here, we provide an outdoor atmosphere where they can get a real feeling of ranch life. They learn while doing it."
—RAY BORCHARD, *work unit conservationist, SCS, Grass Valley, Calif.* ♦

To fetch a pail of water

Two grandsons, Ralph Laffitte (left) and Larry Granger, watch their grandfather, Johnnie Welch, dip the final pail of water from the old spring.

For 40 years Johnnie Welch and his family trudged up the hill and down again to fetch a pail of water.

The family's only source of water is a spring located at the top of a hill 600 feet away and 20 feet above the house. Many trips for water had to be made each day.

"That hill seemed to get higher as I grew older," Mr. Welch said. "And after my children grew up and left home, the chore was all mine."

W. T. Brown, SCS work unit conservationist, helped Welch develop a soil and water conservation plan for his 80-acre farm near Mt. Vernon in the Mobile County Soil Conservation District, Ala. Brown told Welch of a seep spring development that would apply the principle of letting water run downhill to the house. It would be simple, cheap, and dependable.

In this case the simple things in life weren't exactly free, but they were certainly inexpensive. Welch already had a sack of cement, some short pieces of pipe, and a 24-inch culvert to use as a spring box. All he had to buy was 600 feet of plastic hose at a cost of about $50.

When the work was completed, William, his son recently back from the Army, held a bucket under the pipe in the front yard and caught the first water as it flowed down the hill from the spring.

Another part of the conservation plan was to clear a 25-acre blackjack oak and palmetto hillside. A loan from Farmers Home Administration and cost-share payments from the Agricultural Stabilization and Conservation Service enabled him to plant the hillside to Pensacola bahiagrass.

"Before I planted grass," Welch said, "that land couldn't support a gopher, much less pay taxes." Now the bahiagrass is off to a good start, and soon he will be able to increase his herd. ♦

Welch looks on as his son William catches the first bucketful of water to come downhill by gravity flow. Later the pipe was buried and attached to the kitchen sink, and Mrs. Welch sees the result of the seep spring development. "Just think, no one had to go after it," she said. Now all she has to do is turn it on.

Rancher Scott Barr (left) reviews his ranch plan on the ground with SCS Soil Conservationist Dompier as they plan ways to speed range recovery after burning an area of big sagebrush.

A rancher makes a choice . . .

Controlled burning and reseeding restore big sagebrush range

By Claude C. Dillon
Range conservationist, SCS, Spokane, Wash.

Rancher-farmer Scott Barr of Edwall, Wash., had a choice to make.

He could see that big sagebrush was taking over his range, especially one pasture that had been heavily overgrazed by work horses in the years before tractor farming.

He knew that there are several ways to get rid of brush: spraying with chemicals from air or ground; railing or chaining; cutting or beating; plowing or harrowing; or, maybe, burning.

But which would be best for *his* pastures?

Barr discussed brush-control methods with Len Dompier, SCS work unit conservationist serving the Davenport-Reardan Soil and Water Conservation District, with which Barr is a cooperator.

They considered what species of brush were present, what forage plants were under the brush, and whether seeding following control would be necessary to reestablish desirable bluebunch wheatgrass and Idaho fescue.

The alternatives

They concluded that the rangeland was too irregular and stony for use of ground equipment for chemical spraying. Aerial spraying would kill any desirable broadleafed plants that might be present, as well as the brush.

Since big sagebrush was the only brush species present and it is easily killed by fire, Barr finally decided to burn—deliberately and carefully.

If there had been threetipped sagebrush, rabbitbrush, or gray horsebrush, burning would not have been practical because these species sprout back after fire and may become even more abundant than before.

Barr and Dompier considered the small population of sage grouse, which used the pasture. It was determined that the same kind of

Big sagebrush was so dense on Scott Barr's range (left, below) that little grass grew. Three years after controlled burning and seeding, Soil Conservationist Dompier (left) and Barr admire the grass.

habitat was present around the proposed burn area so that the grouse would not suffer.

About 300 acres of the area to be burned had very few desirable forage species. There, seeding would be necessary if perennial grasses were to be established. The other 50 acres had a fair amount of bluebunch wheatgrass and Idaho fescue under the dense sagebrush, so this portion would not need reseeding.

Fire—effective but dangerous

Fire is one of the oldest, most widely adapted, and least expensive methods of controlling sagebrush. It is also the most frequently misused. Barr planned his controlled burning of big sagebrush carefully.

First, he checked with the local fire control organizations for their cooperation and guidance. They issued him a fire permit.

Second, he decided to burn in the fall, when burning would be least harmful to wildlife. At that time, the young of the year would be mature enough to find food and cover in adjacent areas and adjust to new surroundings before winter set in.

Grazing was deferred during the spring and summer of 1963, permitting a maximum of annual grass and weed growth to carry a fire. This also provided improved root vigor of desirable perennial bunchgrasses.

Firebreaks were constructed around the area with a bulldozer, baring a strip 10 feet wide.

In mid-September, the area was fired from the firebreaks toward the center. The afternoon was warm and there was a mild wind. A man on a tractor with a high pressure weed sprayer filled with water followed the workman setting the fire to quickly put out sparks outside the firebreaks.

As soon as the fire was out and the ashes cold, an airplane was hired to broadcast seed—a mixture of Nordan crested wheatgrass, intermediate wheatgrass, Sherman Greenar big bluegrass, and Durar hard fescue—at about 10 pounds of total seed per acre. A good stand of these grasses was established in the deep soil areas where ashes were abundant. The 50 acres which had a fair stand of bunchgrasses was not seeded. The natural stand of bunchgrasses is improving.

Agricultural Conservation Program incentive cost-sharing payments were helpful for the purchase of seed as well as for the cost of hiring the plane to broadcast it.

The total pasture was rested from grazing until the fall of 1965 when it was grazed lightly. It was deferred again in the spring of 1966 and moderately grazed in the fall. Scott Barr put this pasture back to full use in his system of rotation-deferred grazing last spring when cattle grazed it from April 15 to May 15. He plans to leave about 50 percent of the total growth of the bunchgrasses when grazing is completed in the fall.

So far Barr is pleased with the results. He says, "The water that big sagebrush was using is now growing lots of grass." ♦

Workshops for high school students

More than 500 Illinois high school students attended sixteen 5-day conservation workshops this summer. The sessions, sponsored by five Illinois universities, dealt with soil, water, forest, fish, mineral, and game resources.

Most of the students attended on full-expense scholarships provided by soil and water conservation districts, women's clubs, sportsmen's clubs, garden clubs, civic clubs, FFA chapters, the Izaak Walton League, and the Audubon Society. Scholarships ranged from $40 to $50 covering tuition, room, meals, instructional aids, and field trips.

Southern Illinois University sponsored nine workshops at Little Grassy Lake. The outdoor education center near Carbondale gives the university a 1,100-acre outdoor laboratory. Little Grassy Lake was built in 1942 with technical assistance from the Soil Conservation Service.

Northern Illinois University, Western Illinois University, and the Unversity of Illinois each sponsored two workshops, and Illinois State University conducted one.

Robert M. Ring, director of the Illinois Division of Conservation Education at Springfield, says the workshops encourage students to pursue careers in fields of conservation and resource management. Lectures and seminars are supplemented with movies, demonstrations, and field trips. SCS personnel and other Federal and State conservationists participate in the workshops, but most of the teaching is done by university instructors.

Illinois soil and water conservation districts sponsored 76 students and furnished conservation portfolios prepared by the Soil Conservation Society of America to all students who attended. Hillard Morris, president of the Illinois Association of Soil and Water Conservation Districts, encourages their participation.

"With many of our young people growing up amid skyscrapers and concrete playgrounds, we must train specialists to educate our citizens of the need to conserve our countryside," he says. "Summer workshops have provided the kickoff for several conservation careers. We hope to see more in the future."

The universities in Illinois also cooperate with the Office of Public Instruction to offer credit and noncredit conservation workshops for teachers. ♦

Meetings . . .

Food problems are topic for soil and crop scientists

Three professional organizations of soil and crop scientists will meet jointly in Washington, D.C., November 5 to 10. They are the Soil Science Society of America, the American Society of Agronomy, and the Crop Science Society of America.

The principal theme of the meetings this year is "Food for Billions."

There will be about 350 papers dealing with soils and an equal number concerned with crops. Some 50 papers will deal with soil genesis and classification.

A special feature of this year's program of interest to soil scientists is a soil-geomorphology tour in the vicinity of Raleigh, N.C. It will be held November 4 and 5, the 2 days preceding the meetings in Washington.

Recent research findings in the relationships of soil morphology and geomorphology on the Coastal Plain will be demonstrated. These findings are thought to be of particular interest to the classification and utilization of soils in many developing countries, as well as the Southern States. Those interested in the tour should write to Professor R. J. McCracken, head, Soil Science Department, University of North Carolina at Raleigh.

State universities and Land Grant colleges

The general sessions of the annual convention of the National Association of State Universities and Land-Grant colleges are being held November 14-15 in Columbus, Ohio.

The president of the association, James H. Jensen of Oregon State University, will deliver the principal address. Dr. Champion Ward of the Ford Foundation, Dr. Paul Miller, assistant secretary of the Department of Health, Education, and Welfare, and Senator Wayne Morris of Oregon are other speakers at the general session.

The meetings on November 12 and 13 are mostly closed.

Dates and places

November 5-10, American Society of Agronomy, Washington, D. C.

5-10, Soil Science Society of America, Washington, D. C.

5-10, Crop Science Society of America, Washington, D. C

12-15, National Association of State Universities and Land Grant Colleges, Columbus, Ohio

December

3-7, National Recreation and Parks Association, Miami Beach, Fla.

6-8, Western Forestry and Conservation Association, Seattle, Wash.

11-14, American Farm Bureau Federation, Chicago, Ill.

12-15, American Society of Agricultural Engineers, Detroit, Mich.

26-30, American Association for the Advancement of Science, New York, N.Y.

Recreation boom

Americans spend more than $20 billion a year for outdoor recreation. By 1980, they'll spend an estimated $46.6 billion. USDA estimates the recreation boom will create 200,000 new full-time jobs in our small cities and open countryside by 1980.

A survey of people who borrowed money from USDA to start outdoor recreation businesses shows the average income from multiple recreation facilities was $4,400. ♦

New publications

Roughness Characteristics of Natural Channels. By Harry H. Barnes, Jr. *1967. U. S. Geol. Surv. Water-Supply Paper 1849. 213 pp., illus.* Beautifully colored photographs and information on the geometry and roughness characteristics of 50 different stream channels. The 50 sites include a wide range of hydraulic conditions from the boulder-strewn mountain stream of the western United States to the heavily vegetated flat-sloped stream of the southern region. Sand-channel streams are not a part of this report because roughness coefficients for streams of this type have already been defined in terms of size of bed material and other variables. The States involved are Washington, Ohio, Texas, Montana, Oregon, New York, Nebraska, Idaho, New Mexico, Arizona, Georgia, Illinois, Wyoming, Utah, Kentucky, North Carolina, Colorado, California, and Massachusetts.

Landscape Evolution and Soil Formation in Southwestern Iowa. By Robert V. Ruhe and John G. Cady. *1967. USDA Tech. Bul. 1349. 242 pp., illus., with folded map in pocket.* In four parts; chapter 1 discusses the relationships of Pleistocene geology, geomorphology, and soils in southwestern Iowa; chapter 2 the areal relationships of the Pleistocene geology, and geomorphology in parts of Adair County; chapter 3 soils of parts of the Greenfield quadrangle; and chapter 4 the methodology of the soil-geomorphologic studies of the Greenfield quadrangle applied to a small watershed. The report is an evaluation of landscape evolution and soil formation in a humid temperate region, the result of a project of SCS Soil Survey Investigations.

Recreation Land Price Escalation. By Bureau of Outdoor Recreation. *1967. U.S. Dept. Int. 33 pp., illus.* A report on the problem commonly facing agencies responsible for land acquisition as a result of price increases between authorization or announcement of projects and time of purchase.

Geomorphic Surfaces and Surficial Deposits in Southern New Mexico. By Robert V. Ruhe. *1967. New Mex. Institute of Mining and Technology Memoir 18. 66 pp., illus., with folded map in pocket.* A report on a coordinated study

area in New Mexico that began in 1957. Objectives of the original study were to delineate the kinds of landforms and soils in the area and to determine the nature of their origin within the physiographic history of the region.

Suggested Guide for Weed Control 1967. By Crops Research Division, Agricultural Research Service. *1967. U. S. Dept. of Agr. Hbk. 332. 64 pp. $0.40.* An up-to-date handbook of methods of weed control—physical, biological, and chemical—covering general principles and specific recommendations for different types of crops and other cultivated plants. The booklet includes a table of chemical, physical, and biological properties of herbicides.

A Critical Index of Films and Filmstrips in Conservation. Compiled and edited by the Audio-Visual Center, The Conservation Foundation. *1967. 3d ed. O'Hare Books, Flanders, N. J. 79 pp. $1.* Deals with renewable and nonrenewable resources, resources and people, and ecology.

Equipment for Applying Soil Pesticides. By O. K. Hedden, J. J. Wilson, and J. P. Sleesman. *1967. USDA Agr. Hbk. 297. 36 pp., illus. $0.20. Slightly revised; first issued 1966.*

Water and America's Future. *(1967). Soil Conservation Society of America, Ankeny, Iowa. 239 pp. $5.00.* Proceedings of the 21st annual meeting at Aubuquerque, N. Mex., August 1966.

The Hired Farm Working Force of 1965. By Gladys K. Bowles. *1966. USDA Agr. Econ. Rpt. 98. 29 pp.* A statistical report.

Soil surveys

Comanche County, Oklahoma. By Hubert L. Mobley and R. C. Brinlee. *1967. 58 pp., illus.; maps 3.17 inches to the mile (1:20,000).*

Houston and Peach Counties, Georgia. By John C. Woods. *1967. 73 pp., illus.; maps 4 inches to the mile (1:15,840).* Soils surveyed by John C. Woods, J. O. Murphy, and T. A. Rigdon.

Gwinnett County, Georgia. By Ray J. Tate. *1967. 94 pp., illus; maps 4 inches to the mile (1:15,840).*

Delta-Montrose Area, Colorado. By A. J. Cline, Clayton Spears, Forrest Mehaffey, Edwin Kubin, Richard Franklin, and Carl Pachek. *1967. 73 pp., illus; maps 3.17 inches to the mile. (1:20,000).* Soils surveyed by E. W. Knobel, Rey Decker, and Donald McMahen.

Zuni Mountain Area, New Mexico. By John A. Williams. *1967. 86 pp., illus.; maps 2 inches to the mile (1:31,680).* Soils surveyed by John A. Williams, Truman C. Anderson, Jr., Darwin B. Crezee, and Basil Abraskin.

Tehama County, California. By K. D. Gowans. *1967. 124 pp., illus.; maps 2 inches to the mile (1:31,680).* Fieldwork by K. K. Gowans, J. M. Crawford, J. I. Mallory, O. C. Olson, J. DeLapp, and F. Smith.

Farmsize efficiencies

Economic Research Service of USDA reports that three studies showed 1-man farms were capable of achieving average costs as low as any larger size. In the production of cling peaches in California, average cost was found to be a minimum as orchard size reached 90 to 110 acres—basically a 1-man operation—when mechanized practices were used. The utmost efficiency was attained by a highly mechanized 440-acre irrigated cotton farm in Texas and a 1,600-acre wheat-summer fallow farm in Oregon. ♦

USDA resource conservation

A large part of the land and water resources of the United States are privately owned and operated under the laws of the 50 States. USDA has the major responsibility for cooperative programs with the States to conserve, develop, and manage soil, water, grass, forest, and wildlife habitat on private lands. These programs include research, education, extension, technical, credit, and financial assistance. On the National Forests and National Grasslands, USDA administers a multipurpose program of resource management. ♦

Conservation irrigation

Conservation irrigation is the use of irrigated soils and irrigation water in a way that insures high production without wasting either water or soil. It means using cropping, irrigation, and cultural practices that maintain the land in permanent agriculture. ♦

AMERICA THE BEAUTIFUL COLOR LITHOGRAPHS

America The Beautiful—Maine USDA SOIL CONSERVATION SERVICE

CONSERVATION FARMING SYSTEMS CROSS FARM BOUNDARIES, CENTRAL AROOSTOOK SOIL AND WATER CONSERVATION DISTRICT

Full-color lithograph prints suitable for framing—one for each State, Puerto Rico and Virgin Islands—are available from the Superintendent of Documents for 10 cents each or $5.00 for set of 52. Obtain order blanks from your local SCS or postoffice.

From the Administrator:

Erosion Control and Agriculture/2000

- *Acheiving erosion control and reducing sediment damage on the two-third of the privately owned lands not yet adequately treated.*
- *Eliminating sediment pollution from all streams and reservoirs, and from all National Forest lands.*

These two goals among those listed in *Resources in Action: Agriculture/2000* as the current expression of the policies and programs of the Department of Agriculture tell us that the original mission of the Soil Conservation Service has not been abandoned, however much it has been broadened to include new responsibilities.

Our continuing concern with new aspects of resource conservation—development of outdoor recreation, enhancement of natural beauty, economic development of rural communities, and other important problems in the use and management of land and water resources—could without proper understanding cause responsible landowners and conservationists to lose sight of the fundamental problem of soil erosion.

This is likely to be especially true in agricultural areas where aggressive action by soil conservation districts has made real progress in altering patterns of land use and reducing erosion damages. Satisfaction with success sometimes dims awareness of failure and oversights.

But the job of erosion control has not been completed, and the need for it has not disappeared. The Conservation Needs Inventory revealed that two-thirds of the non-Federal rural land still needs soil and water conservation treatment of some kind. The seriousness of this need is recognized by the task force that formulated the Department's statement on Resources in Action.

Significantly, the new blueprint of USDA action does not set up erosion control as an objective to be sought for its own sake. It is, rather, a means of implementing stated policies to attain objectives of broad economic and social significance.

The goal of "achieving erosion control . . . on . . . land not yet adequately treated," for example, is one of six ways the Department proposes to accomplish its first objective for Resources in Action; namely, to *Upgrade the quality of the environment.* The others are:

"Extending erosion control, landscaping, and enhancement of natural beauty as standards in the construction and maintenance of all roads and highways.

"Accelerating research that will help acheive specific reductions in air and water pollution.

"Making technical services and guidelines available to county and municipal governments to aid in proper site selection and erosion control in suburban construction.

"Helping to rehabilitate old strip-mine scars and establishing conservation and land-restoration practices as standards in surface operations.

"Modifying, where necessary, resource use to prevent impairment of environment."

Thus, erosion control is seen in perspective as a necessary part of a broader objective concerned with the quality of the total environment.

Likewise, "eliminating sediment pollution from all streams and reservoirs . . ." is a goal in implementing policies to attain the objective to *Help find solutions to America's water problems.*

Again, erosion control is recognized as a part of the program to *Strengthen the economy and standards of living in rural America.* One of the goals in implementing policies to this end is "Getting resource conservation firmly recognized and used as the cornerstone of rural community development."

Another is "Completing treatment and shaping of all the land suited for crops to reduce soil and water losses and accommodate modern machinery."

It is clear, then, that the stability of the soil in place—i.e., control of erosion—is an essential condition to the efficient use of resources and the conservation of man's total environment as envisioned for Agriculture/2000.

As soil conservationists become active in the service of urban and suburban land planners and builders, we see some of the same urgent concern over erosion and zeal for its control that fired the attack on "the menace of soil erosion" on the farmland of the Nation a generation ago.

Such spirited reaction to a problem newly recognized is natural. It is a mistake to let it be dimmed by familiarity, or lost in the pursuit of new interests.

Soil conservation today means many things unthought of in the early days of the Soil Conservation Service, but it still means, among all the others, keeping the soil in place and in productive condition under agricultural or nonagricultural uses to meet human needs.

D. A. WILLIAMS

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District cooperator starts plan at 104 years

When Melquiades Ortiz recently signed up, at 104 years, as cooperator with the Grant Soil and Water Conservation District in southwest New Mexico, he became top contender for the title of oldest known conservation district cooperator.

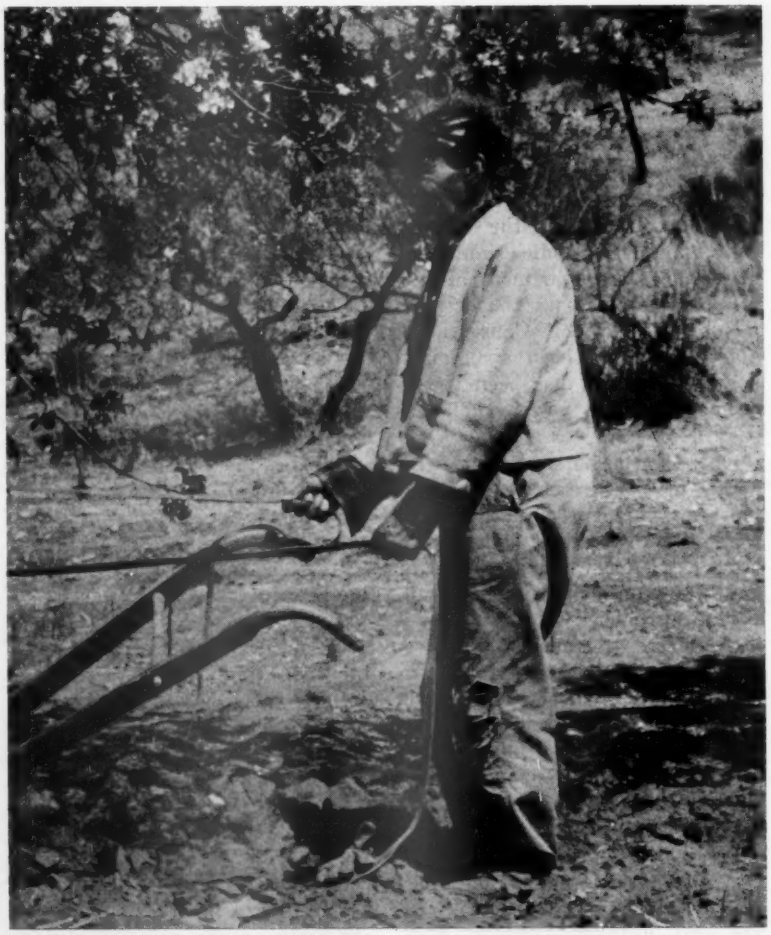
He is still an active farmer, with help from his children and his faithful work mare "Dolly," and produces grain, alfalfa, and apples. He intends to carry out a conservation plan on his farm in the Mimbres Valley.

Three years ago, at the age of 101, Ortiz joined his community in signing up for a 5-year community group enterprise plan to completely rehabilitate the San Lorenzo Community Irrigation System.

The project diverts water from the Mimbres River to irrigate orchards and cropland.

The system includes a major diversion dam, ditch lining, pipeline, flume and siphon, and irrigation water-control structures. It is now three-fourths completed, and Ortiz looks forward to seeing it finished within a year.

He was brought as a child 102 years ago to the dry, invigorating climate of the Mimbres Valley from where he was born in a small village south of Casa Grande in Chihuahua, Mexico. This was less than 10 years after the U.S. Government purchased the land from Mexico, and several years after it became the Territory of New Mexico.



Melquiades Ortiz, an immigrant from Mexico 102 years ago, plans for the future on his New Mexico farm.

Ortiz recalls from his childhood the large herds of cattle driven up from Mexico to graze in the colorful valley during the summer, and he remembers bands of Apache Indians traveling the mountains of New Mexico. ♦